

old; and which is remarkably interesting in a physiological point of view, as shewing the power of the retina to preserve its susceptibility to light for twenty years, though not the only case recorded. There was certainly in this case a great approximation to the phenomena manifested in congenital blindness, but there was not that marked ignorance in recognising objects at first sight, nor that palpable want of correspondence between the touch and sight, but both existed to some extent. It was also curious that he should become blind after five years of the same disease with which his brother was born blind.

I recollect restoring a man, aged 35 years, who had been blind for a period of twelve years from the venereal disease, causing closure of the pupils. This man, after an operation for artificial pupil, recognised, of course, every thing perfectly the moment he was permitted to look about him, and still enjoys a very tolerable share of vision at *Cawnpore*.

VI.—*Memorandum of the progress of sinking a Well in the bunds of Chandpur, near the foot of the Hills. By Mr. WILLIAM DAWE, Conductor, Delhi Canal Department.*

In sinking wells through the soils, without and within the lower range of hills, I have seen repeated failures owing to the usual mode adopted in digging for the water, (i. e. with perpendicular sides;) and as I was only about 400 yards from a branch of the *Jumna*, the level of its water about 14 feet below the surface of the top of the proposed well, I calculated upon finding water at 20 feet deep at the utmost. I therefore commenced digging 42 feet diameter, contracting as I sunk, and this admitted of leaving a couple of winding steps to bring up the contents by basket loads, in preference to being drawn up with a drag-rope, (which method could not well be adopted, the top excavation being so wide.) At the depth of 24 feet I was apprehensive that the work would have been a failure, owing to the vast accumulation of heavy boulders, from 4 to 10 maunds weight, which I had no purchase to get up. This obstacle was got over by the simple method of expending one for every step of the winding roadway, always taking the precaution of letting the boulders sufficiently into the bank to prevent the possibility of their falling down on the work-people below. By this method down as deep as 37 feet the boulders were expended as we came on them, and as the soil there had a more favorable appearance for working, and there was a probability of soon getting water, and the space had become so contracted,

I was obliged to commence sinking perpendicular, which was carried on till we at length found water at 72 feet deep. The boulders found in the latter part of the work were only few, but they were of the largest size, and those were got rid off by excavating recesses in the sides and depositing them therein. The above excavation down to 72 feet was completed for 120 sicca rupees.

Part of the cylinder having been built, it was sunk in June, where I found the water had sunk 7 feet 6 inches lower. We sunk further 14 feet, when we got to a bed of clear pebbles, and bedded the well ring on small boulders, with 6 feet 6 inches water; and as the driest season has arrived, we may expect always to have a plentiful supply of good water from a total depth of 86 feet below the surface.

MEMORANDUM OF THE SOIL IN THE CHANDPUR WELL.

- Feet 1. Clayey soil.
- 2 to 7. Light soil, consisting of clay and sand, the proportion of sand increasing with the depth.
8. A vein of sand.
- 9 to 11. Sand with slight mixture of clay.
- 12 to 14. Fine sand.
15. River sand.
16. Coarse river sand.
17. Ditto ditto, with gravel and small boulders.
18. Large gravel and boulders.
- 19 to 25. Ditto ditto, some of the boulders very large.
- 26 to 27. Ditto ditto, large boulders, with a mixture of clay.
- 28 to 30. Ditto ditto, with a layer of immense boulders.
- 31 to 32. Ditto ditto, and small boulders through which a spring of water has passed, shewn by the stones being without a particle of sand mixed with them.
- 33 to 36. Large gravel with large boulders.
37. A vein of old spring, as above.
38. Gravel with small boulders.
39. A vein of river sand with a mixture of small stones.
- 40 to 41. Gravel with large boulders.
- 42 to 46. Large gravel with small boulders.
- 47 to 48. A vein of old spring—small boulders.
- 49 to 54. Gravel with large boulders.
- 55 to 56. Vein of river sand, slightly mixed with gravel.
- 57 to 64. Gravel with small boulders.
- 65 to 66. A vein of fine river sand.
- 67 to 69. Gravel with no boulders.

- 70 to 72. Vein of fine river sand—(water found here).
 73 to 76. Fine sand, with a mixture of clean gravel.
 77 to 79. Gravel with a mixture of yellow sand.
 80 to 83. Clear fine river sand.
 84 to 86. A bed of clean pebbles, and the well ring bedded on small boulders.

N. B. The water sunk while the cylinder was being built to 79-6.

Note by Lieutenant W. E. BAKER, Engineers, Assistant Superintendent of Canals.

The situation of this well is close to the southern base of the outer range of hills, where they fall away into the valley of the *Jumna*, a branch of which now occupied as the bed of the *Delhi* canal, passes within a short distance of it. The strata, of which the section is thus exhibited, are evidently the deposits of a stream, having, for the greater part of the time, at least as strong a fall and as rapid a current as the *Jumna* at the same spot now has—and they are precisely what might now be forming in the *Jumna*, were that river raising its bed—even the strata of small rounded stones, in which Mr. DAWE has attributed the removal of sand and smaller gravel to the action of formerly existing springs, have their representatives in the numerous shingle banks of the *Jumna*.

The most striking circumstance, however, illustrated by Mr. DAWE'S observations, is the impermeability of these river deposits to the water of the neighboring channel, the stream of which is never dry. This circumstance was even more strongly exemplified in the same vicinity—at the village of *Rayanwalla*—where, within the inclosure of the canal chowkey, and not 60 yards distant from the water's edge, it was desired to sink a well to supply clear water to such of the establishment as remained there during the rainy season, when the river water is turbid and unwholesome. The shaft was of small diameter, as water was confidently expected at but little below the level of that in the canal: no trace of it, however, was met with to the depth of 60 feet—when, from the smallness of the shaft, it became dangerous to proceed further; the attempt was therefore abandoned and the shaft filled up again. The strata pierced through on this occasion consisted of large and small boulders, gravel and sand materials, of which we find it impossible to form a dry bund, even where the difference of level is only 2 or 3 feet—while here, the excavation must have gone at least 50 feet below the canal level.

In apparent contradiction to this, is a well known fact, connected with the rivers flowing through the northern parts of *Rohilkhand* into

the Ganges. I mean the disappearance from the surface, near where they leave the outer range of hills, and then again emerging at the distance of 10 or 12 miles lower down; thus shewing the complete permeability of the gravel beds through which they must be supposed to trickle—and that this is in some measure the case in the *Jumna* also, is rendered probable by a circumstance which came under our observation in the great drought of 1833-34.

In order to supply the excessive demand for water for irrigation, it became necessary to throw a gravel bund right across the *Jumna*—just below the head of the canal; and at this very period, as appears from a record kept in the Executive Engineer's Office at *Agra*, a slight diminution only of the waters of the *Jumna* at that place was observable.

VII.—*The History of Labong from the Native Records consulted by Dr. D. RICHARDSON, forming an Appendix to his journals published in the preceding volume*.*

The annals of *Labong* reach back to the same remote and fabulous period as those of the neighboring nations. In the year 1118, (A. D. 574,) after GAUDAMAN had obtained *nib-ban*, or eternal rest, two holy men, WATHOO-DAY-WA† and TUKA-DANDA, (having first buried a shell with the spiral turned the reverse way,) by prayers and holiness raised from out the earth the walls, gates, and ramparts, and sunk the fosse of *Labong*. They marked the site of the pagoda, and during two years employed themselves in calling together the people from the surrounding forests and small villages. In 1120 they raised to the throne RAMA or ZAMMA-DAY-WE, daughter of the king of *Chandapur* (or, *Wintian*, the capital of *Saroarata-ty-ne*), and widow of a prince of *Cambodia*. She had twin sons, MAHANTA-YATHA. The elder succeeded her in *Labong*, received the common title of “SEN-BUR SHEEN,” or Lord of the White Elephant, for having caught one of that color. AINDAWARAJA, the younger, built and reigned in *Lagon*. In *Labong* (the Magadharrame of which is HARI-BOUNG ZAYATYNE) from RAMA-DAY-WE to ADUTZA-WOON-THA, who built the pagoda (*assein dayá*) there reigned 35 kings, and from ADUTZA-WOON-THA to BENYA-THOHA 19; in all 54 kings reigned in *Labong*. BENYA-MEN-YEA, called in *Ava* History DOLANA BENYA-TSO-MEN-YEA, the son of BENYA-THOHA, succeeded him, and reigned ten years in *Labong*,

* We have already quoted from this document in manuscript; see Appendix General Tables, page 135.—ED.

† *Vasu-deva*?—ED.